Pros and Cons in Aquatic Weed Control Methods

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(Note: Products and chemicals mentioned were current in 1979, and may or may not be current today. Specific update notes are added in italics. Product labels should always be referred to for specifics including water use restrictions and use sites.)

A pond or lake requires a certain amount of care when growth becomes unsightly.

"You can lead a horse to water, but you can't make him drink." Judging from the present condition of many of our country's surface waters, you really can't blame him. Your lake or pond deserves as much or more attention than the surrounding landscape. The care of each, however, can compliment one another. Proper land management within the watershed area will serve to prevent some of the severe problems. This includes restricted use of fertilizers on the adjacent turf, gentle sloping and contouring of the surrounding land, and suitable cover or bank vegetation along shoreline areas. Avoid planting "messy" trees such as weeping willows near shore unless you intend to do a considerable amount of clean up.

So much for protective measures. What about waters with existing problems? The major one, of course, is overabundant aquatic vegetation often referred to as "weeds."

Just to set the stage properly, let us define "aquatic weeds" as any plants, which grow so profusely as to crowd out more desirable plants or interfere with economic, recreational or aesthetic value of a body of water. A number of techniques can be utilized to control noxious aquatic growth.

Physical Methods

This approach involves the utilization of manpower and muscle power for the removal of aquatic vegetation. It is probably the simplest approach; however, both are time-consuming and tiresome. Equipment requirements are minimal. Rakes, shovels, or sickles can be employed. Sometimes "specialized"' equipment and techniques are used such as dragging an old bedspring along the bottom. Most of these techniques are limited to use very close to shorelines. They'd be inefficient and awkward to try from a boat.

Mechanical Methods

The use of specialized mechanical equipment has been employed for both cutting and removal of aquatic growth. Units range in size from toothed blades which will fit on the front of a 14-foot johnboat up to large harvesters with conveyors for loading and unloading cut weeds.

Most harvesters and cutters can be operated by one or two men; however, initial capital outlay, maintenance costs, and energy expenditure can be quite high. The question as to whether removal of aquatic vegetation from the water will significantly decrease the water's nutrient and sediment content is yet to be fully answered. In many cases, nutrients and sediments entering the lake from outside sources will quickly replace those removed in the plant tissue. Nitrates and phosphates stored in the sediment are constantly being released or taken up by new plant growth.

Most harvesters have the capacity to cut down to a 5 or 6 foot depth. Most rooted plant fragments and free-floating pieces have the ability to re-grow. It is, therefore, of utmost importance for operators to pick up cuttings in order to avoid compounding the aquatic problem. Several cuttings may be necessary per season.

Several additional factors should be taken into consideration before purchasing an aquatic harvester: 1) the unit will operate on a seasonal basis only. If you must do a cost/benefit analysis consider only that time during which weed growth presents a problem. 2) Buy equipment to fit your needs. Small pontoon-sized units might only be capable of taking care of an acre a day. Obviously, this wouldn't be suitable to use on a several hundred-acre lake. Abuse through over-use will result in breakdowns and higher maintenance costs. 3) What about disposal of cut weeds? Make sure you either have the means or equipment to haul the matter away.

Habitat Manipulation

A number of techniques have been employed which involve affecting changes in the aquatic environment, which will reduce or eliminate vegetation growth.

Drawdown or lowering of water levels periodically to expose bottom sediments can be effective in a limited number of situations. This will cause drying out of submerged vegetation around the shoreline and compaction of soft sediments. An added benefit, in some cases, is the concentration of fish into deeper portions of the lake or pond. Seeds from many aquatic plants will survive. Drawdown or lowering of water levels periodically to expose bottom sediments can be effective in a limited number of situations. This will cause drying out of submerged vegetation around the shoreline and compaction of soft sediments. An added benefit, in some cases, is the concentration of fish into deeper portions of the lake or pond. Seeds from many aquatic plants will survive.

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Shading the surface of the water can be done naturally or artificially. Structures built adjacent to ponds for the purpose of restricting sunlight are of very limited use. Floating black plastic sheeting has been used to cover areas of weed growth. It restricts water use however, and can be utilized only on a very small scale. Shading the surface of the water can be done naturally or artificially. Structures built adjacent to ponds for the purpose of restricting sunlight are of very limited use. Floating black plastic sheeting has been used to cover areas of weed growth. It restricts water use however, and can be utilized only on a very small scale.

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Dredging has the twofold effect of removing nutrient-rich sediments and deepening the water body. Both of these will aid in reducing rooted plant growth. Draglines with clam buckets have been used along shorelines and in small ponds. Hydraulic dredges and mud-suckers have been developed for larger operations. Dredging's biggest drawback is finding suitable disposal sites for the spoils. It is imperative that the water contained in these spoils does not run directly back into dredged lakes. As a result, dredging is very costly. It will totally disrupt the environment for a period of time. Dredging has the twofold effect of removing nutrient-rich sediments and deepening the water body. Both of these will aid in reducing rooted plant growth. Draglines with clam buckets have been

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Biological Control

The introduction of organisms into an environment to control existing pests shows some promise for the future. At present, however, this technique deserves much more widespread scientific attention before it is implemented on a large-scale basis. The ecology of a water body can be detrimentally altered from this practice.

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Chemical

Nutrient inactivation has been examined and attempted as a means of limiting aquatic plant growth. This approach was adapted from wastewater treatment practices and applied on a larger scale in the treatment of lakes. Liquid or granular alum, sodium aluminate, or iron chloride has been applied to surface waters at rates ranging from hundreds to thousands of pounds per foot. The result is the formation of a floc or precipitate containing phosphorus, one of the key nutrients. Nutrient sources outside the lake are not curtailed.

Treatment with a Cutrine-Plus algaecide restored the water quality of this pond.

Algaecides and herbicides are the most popular and widespread means of controlling noxious plant growth. While chemical control is cosmetic in nature in that it treats the problem rather than its source, chemicals do offer relatively immediate relief at a reasonable price. As in the other categories of pest control, the EPA has required states to set up a training and certification program for private and commercial aquatic pest control applicators. Algaecides and herbicides are the most popular and widespread means of controlling noxious plant growth. While chemical control is cosmetic in nature in that it treats the problem rather than its source, chemicals do offer relatively immediate relief at a reasonable price. As in the other categories of pest control, the EPA has required states to set up a training and certification program for private and commercial aquatic pest control applicators.

In order to insure effective results, it is first necessary to identify the target plants or algae. This can be done by using an identification guide or by obtaining technical assistance through your local university, DNR, etc.

Determine the size of the intended treatment area. It is usually necessary to consider depth as well as surface area. Most often, application rates are given pounds or gallons to apply per acre-foot of water. An acre-foot is 43,560 square feet one foot deep. After determining surface acreage by using a map or direct measurement, it is advisable to take several depth soundings within the intended treatment area. These can be used to come up with an average depth figure. Multiplying surface acres times average depth will give acre-feet of water to be treated.

Choose the proper herbicide and/or algaecide. Based upon the type of vegetation you intend to control and the size of the area to be treated, the proper chemical and amount can be procured. Several products also come in li-quid or granular formulations. Spot treatments or deep-water treatments of 6 feet or more are best done with a granular formulation, if available. Larger areas are easier to treat with liquids. Sometimes,

algaecides and herbicides can be tank-mixed for the purpose of controlling both weeds and algae in a single application. The algaecide Cutrine-Plus *(manufactured by Applied Biochemists)* is compatible with both the commonly used herbicides Diquat *(now labeled Reward for aquatic applications-manufactured by Syngenta)* and Aquathol K *(manufactured by Cerexagri)*. Studies indicate the combinations actually enhance herbicidal activity.

A number of techniques can be utilized for applying aquatic pesticides. It is necessary to choose equipment, which will handle the type of formulation being used and cover the treatment area in a reasonable period of time.

A low horsepower pump (1.5 hp to 5 hp) set-up with chemical in-take end will handle most liquid pesticides. It offers portability and utilizes the lake or pond water for diluting the chemical within the pump. These units can be used from shore as well as from a boat.

Power tank-type sprayers are useful for distributing liquid herbicides and algaecides along shoreline areas. Spot treatments or small area applications can be made with backpack orchard sprayers. Granules can be spread by hand or with a scoop.

Results from chemical treatments may take several days to a couple weeks. Herbicides such as Aquathol K, Diquat *(now Reward)*, and 2,4-D usually require water use restrictions on swimming, fishing, and irrigation whereas no restrictions apply following treatment with copper-based algaecides such as Cutrine-Plus.

Chemical treatment offers several advantages. It allows you to control vegetation close to shore and around piers and rafts. Manpower and equipment requirements are minimal. Up to 50 surface areas per day can be treated by two men on a barge using one pump.

A typical seasonal control program would involve a herbicide application in spring followed-up by two or three algaecide treatments during the summer. A more intensified program may be necessary in southern states.